DoD Ergo Briefing August 2003

NIOSH Musculoskeletal Disorders Research Program , 1998-2002

Stephen D. Hudock, Ph.D., CSP
Human Factors and Ergonomics Research Section
Division of Applied Research and Technology

Overview

- Scope of the Problem
- Intramural Program
- Extramural Program
- National Occupational Research Agenda Team

Scope of the Problem

- Occupational low back pain accounts for approximately 34% of the cost of all injuries and illnesses combined
- In 1997, there were 603,096 estimated cases of MSDs in the US that resulted in days away from work
- Almost half involved lifting and another 13% involved repetitive motion

Intramural Program

- Seven NIOSH Divisions : DART, DSHEFS, DSR, EID, HELD, PRL, SRL
  - 30 active projects in FY 2002
  - Two large interdivisional research programs
    - Big Ergo - (DSHEFS, DART, and HELD)
    - Jarring and Jolting (SRL, PRL, and DART)
- Hazard Evaluation and Technical Assistance Program (HETA)
- Surveillance

Intramural Program

Primary focus of intramural projects:

- Epidemiology & surveillance
- Exposure assessment & methods
- Intervention & engineering controls
- Industry specific problems
  - Healthcare, construction, maritime, agriculture, manufacturing, office environment, etc.

NIOSH Divisions Conducting MSD Research in FY 2002

Pittsburgh & Spokane

- Pittsburgh Research Laboratory — **2 Projects**
- Spokane Research Laboratory — **3 Projects**

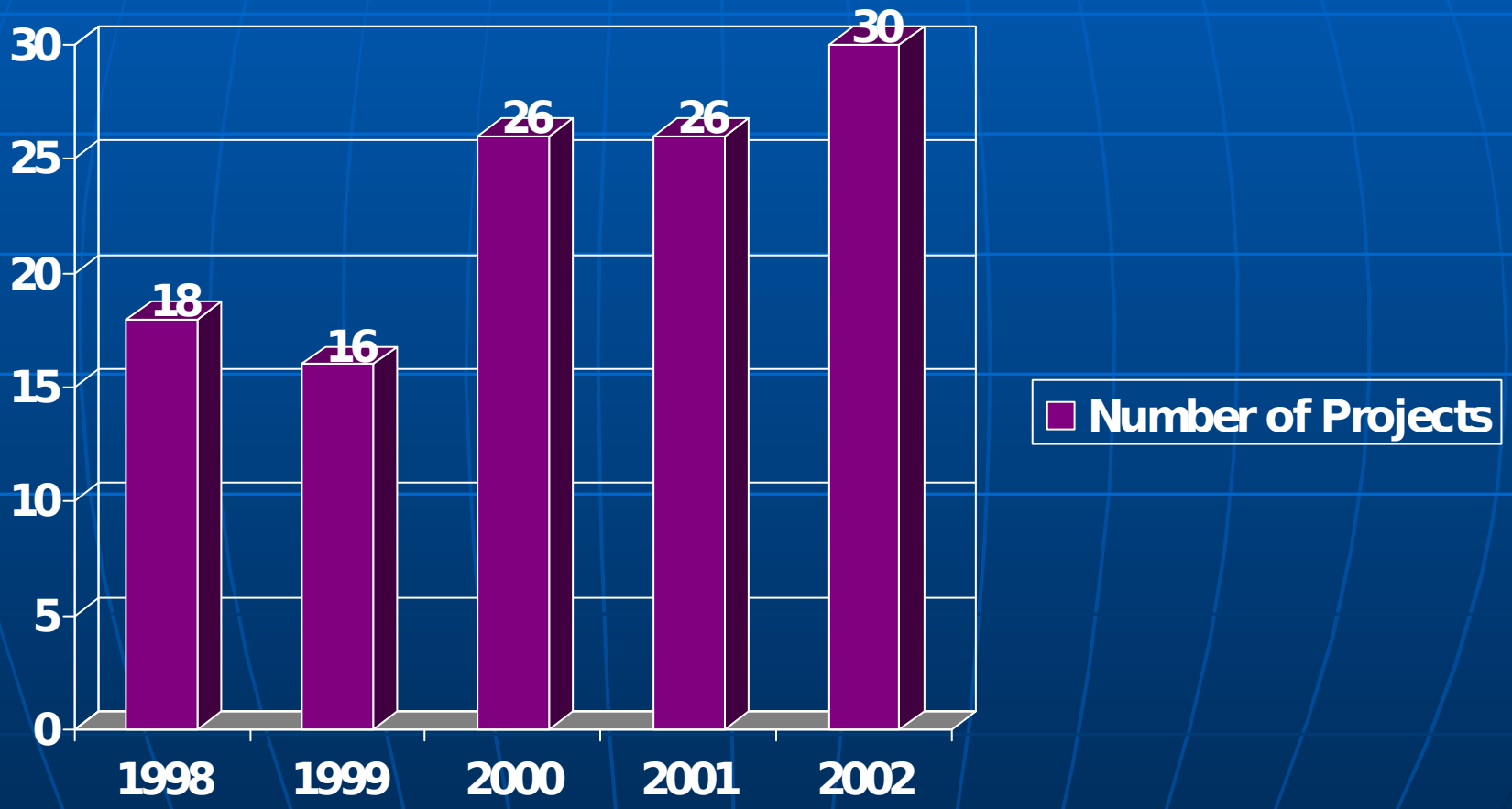
Morgantown

- Division of Safety Research — **3 Projects**
- Health Effects Laboratory Division — **5 Projects**

Cincinnati

- Division of Applied Research & Technology — **11 Projects**
- Division of Surveillance, Hazard Evaluations & Field Studies — **3 Projects**
- Education & Information Division — **3 Projects**

Intramural MSD Projects 1998-2002



DART

- Interventions in maritime - STORM Matrix
- Interventions in construction
- Interventions in agriculture
- Children working in agriculture
- Hand tool design
- Home health care workers

DART Cont.

- Low Back Component of Big Ergo Program
- Intervention Component of Big Ergo Program
- Alternative Keyboards
- Shiftwork
- Biomechanical Component of Jarring and Jolting Program

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

English and Spanish Versions

Ergonomic solutions for the agriculture industry.

National Institute for Occupational Safety and Health
NIOSH

DSHEFS

- Big Ergo Program Administration
- Upper Extremity Component of Big Ergo Program
- Low Back Component of Big Ergo Program

DSR

- Prevention of injuries due to installing drywall
- Evaluation of best practices back injury prevention program (nursing homes)
- Studies of anthropometrics
- Effectiveness of Engineering Controls

Evaluation of a Best Practices Back Injury Prevention Program in Nursing Homes

James W. Collins, PhD,[1] Laurie Wolf, MS, CPE,[2] Jennifer Bell, PhD[1], and Bradley Evanoff, MD, MPH[3]

[1] Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health
[2] BJC Health System
[3]Washington University School of Medicine – St. Louis

EID

- Hazard Review: Hazards in Hospitals & Health Care
- NIOSH Lifting Equation: Evaluation of CD-ROM training program
- Effectiveness of Training and Controls in Nursing Homes

HELD

- Office ergonomics and environments
- Vibration and noise assessment of power hand tools
- Prospective Hand Arm Vibration (Big Ergo)
- Cellular and animal models for the study of hand-arm vibration syndrome
- Musculoskeletal diseases and inflammatory processes

Dynamometry model

- Input parameters
  - Muscle action
  - Range of motion
  - Number of repetitions
  - Exposure duration
  - Velocity
  - Preconditioning
- Outcome measures
  - Changes in real-time muscle function
  - Changes in muscle tissue
  - Markers of Inflammation
  - Markers of Injury
  - Changes in analytical parameters of muscle response

PRL

- Ergonomics interventions in mining
- Agriculture component of Jarring and Jolting Program

SRL

- Material handling accident reduction in underground mines
- Injury prevention for metal/non-metal bolting operation
- Jarring and Jolting Program Administration
- Construction component of Jarring and Jolting Program

Surveillance*

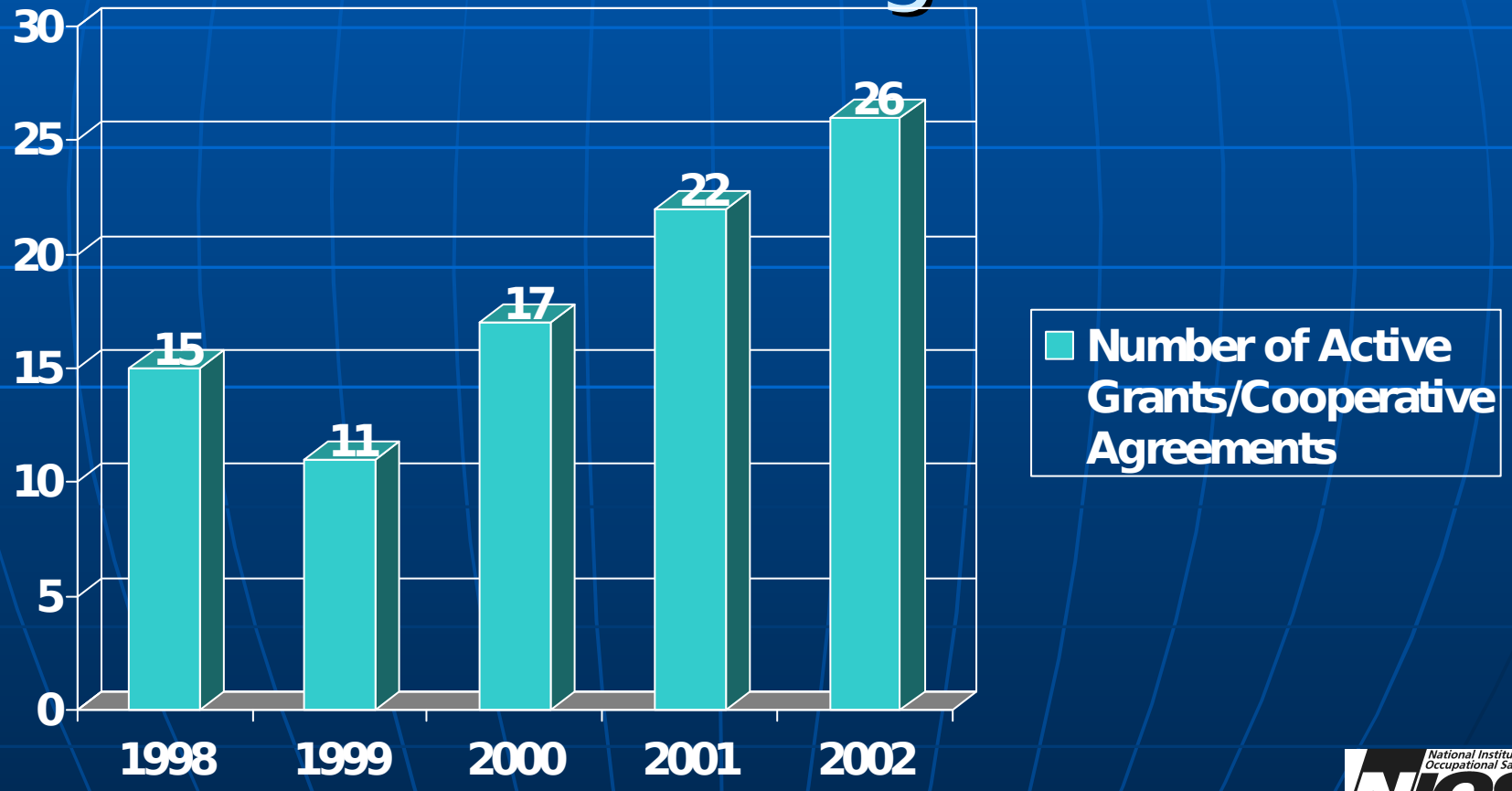
National Exposure at Work Survey (NEWS)

Survey similar to previous NIOSH National Occupational Exposure Surveys (NOES)

Extramural MSD Research Program

- Office of Extramural Programs (OEP)
  - Grants
  - Cooperative Agreements
  - Training Sites (ERCs)

Active Grant, Cooperative Agreements, and Contracts Awards Focusing on MSDs



Education & Research Centers (ERCs)

- 16 University based ERCs
- Support academic degree programs and research training opportunities
- Continuing education (CE) programs for occupational safety and health professionals
- Training in ergonomics and prevention of MSDs
- http://www.niosh-erc.org/

National Occupational Research Agenda (NORA) MSD Team

- Includes two of the 21 priority areas
  - Low Back
  - Upper Extremity MSDs
- Fourteen members on team representing industry, labor, academia, and government
- Mission is to develop a national research agenda, foster research efforts aimed at prevention of MSDs, and develop partnerships

NORA MSD Team

National Research Agenda for MSDs

CDC
Centers for Disease Control and Prevention
NORA
National Occupational Research Agenda
National Occupational Research Agenda for Musculoskeletal Disorders
Research Topics for the Next Decade
A Report by the NORA Musculoskeletal Disorders Team
U.S. Department of Health and Human Services
Public Health Service
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health
NIOSH

NIOSH Publication Number 2001-117

National Institute for Occupational Safety and Health
NIOSH

Discussion Points

- What are the gaps in the NIOSH MSD research program?
- What type of products should we be developing?
- How can we improve our dissemination of important findings?
- How can we measure our impact on reduction/prevention of MSDs?